

## PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 0300111	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/GB2004/001816	International filing date (day/month/year) 28.04.2004	Priority date (day/month/year) 30.04.2003
International Patent Classification (IPC) or national classification and IPC G01N27/64, H01J49/40		
Applicant SMITHS GROUP PLC et al.		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> <i>(sent to the applicant and to the International Bureau)</i> a total of sheets, as follows:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</li> <li><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</li> </ul> <p>b. <input type="checkbox"/> <i>(sent to the International Bureau only)</i> a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>		
<p>4. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Box No. I Basis of the opinion</li> <li><input type="checkbox"/> Box No. II Priority</li> <li><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and Industrial applicability</li> <li><input type="checkbox"/> Box No. IV Lack of unity of invention</li> <li><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or Industrial applicability; citations and explanations supporting such statement</li> <li><input type="checkbox"/> Box No. VI Certain documents cited</li> <li><input type="checkbox"/> Box No. VII Certain defects in the international application</li> <li><input type="checkbox"/> Box No. VIII Certain observations on the international application</li> </ul>		
Date of submission of the demand 06.10.2004	Date of completion of this report 15.06.2005	
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Telephone No. +31 70 340- Datta, S	



**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/GB2004/001816

**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
    - international search (under Rules 12.3 and 23.1(b))
    - publication of the international application (under Rule 12.4)
    - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

**Description, Pages**

1-7 as originally filed

**Claims, Numbers**

1-9 as originally filed

**Drawings, Sheets**

1/3-3/3 as originally filed

a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3.  The amendments have resulted in the cancellation of:
  - the description, pages
  - the claims, Nos.
  - the drawings, sheets/figs
  - the sequence listing (*specify*):
  - any table(s) related to sequence listing (*specify*):
4.  This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
  - the description, pages
  - the claims, Nos.
  - the drawings, sheets/figs
  - the sequence listing (*specify*):
  - any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims	2,7
	No: Claims	1,3,4,6,8,9
Inventive step (IS)	Yes: Claims	
	No: Claims	5
Industrial applicability (IA)	Yes: Claims	2,7
	No: Claims	1,3-6,8,9

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.  
PCT/GB2004/001816

**Re Item V.**

The following documents are referred to in this communication:

D1 : WO 98/08244 A (MILLBROOK INSTR LIMITED ; STEELE TIMOTHY ANDREW (GB); ECCLES ADRIAN JO) 26 February 1998 (1998-02-26)  
D2 : GB 2 300 296 A (FRANZEN JOCHEN) 30 October 1996 (1996-10-30)  
D3 : US 4 707 602 A (KNORR FRITZ J) 17 November 1987 (1987-11-17)

**Article 33 PCT:**

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1,3,4,6,8 and 9 is not new in the sense of Article 33(2) PCT.

Document D1 which is considered to represent the closest state of the art discloses (the references in parenthesis applying to this document):

A detection system including a detection cell having an entry gate, the system including drive means for controlling switching of the gate, characterised in that the drive means is arranged to control switching of the gate in a pseudo-random binary sequence (D1 Page 2 line 26-Page 3 line 19). Hence claims 1 and 6 lack novelty in the sense of Article 33(2) PCT.

Claims 3 and 8 relate to the output being transformed in to the time-domain by matrix algebra. This is achieved by D1 (cf., Page 7 line 1-3) and renders these claims also lacking novelty.

Claims 4 and 9 relate to the output of the ion analyser being deconvoluted, this is achieved by D1 (cf Page 15 line 20-23) and renders these claims also lacking novelty.

Claim 5 relates to the detection system being an IMS detection system characterised in that the cell has a drift region and that the gate is arranged to control entry to the drift region (cf D2 Claim1 Part (a)), hence this claim lacks an inventive step in the sense of Article 33(3) PCT.

Claims 2 and 7 relating to the pseudo-random binary sequence being bit-flipped to reduce noise is neither disclosed nor rendered obvious by the available prior art.

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